

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Application of:

**McKinnon III, Martin W.**

Serial No.: **09/800,717**

Filed: **March 7, 2001**

Confirmation Number: **5106**

Group Art Unit: **2616**

Examiner: **Mattis, Jason E.**

Docket No.: **A-8973 (191930-1340)**

For: **Monitoring and Allocating Access Across a Shared Communications Medium**

**RESPONSE**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The non-final Office Action mailed May 30, 2006 has been carefully considered. In response thereto, please enter the following amendments and consider the following remarks.

**AUTHORIZATION TO DEBIT ACCOUNT**

It is not believed that extensions of time or fees for net addition of claims are required, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to deposit account no. 20-0778.

## AMENDMENTS

### *In the Claims*

The following is a marked-up version of the claims with the language that is underlined (“    ”) being added and the language that contains strikethrough (“~~—~~”) being deleted:

1. (Previously Presented) A method of providing network access across a shared communications medium in a downstream direction towards competing users, comprising the steps of:
  - (a) monitoring network access usage by at least one user during a time interval;
  - (b) determining whether the at least one user has previously been assigned a forecast function;
  - (c) in response to determining that the at least one user has not previously been assigned a forecast function, assigning a forecast function to the at least one user;
  - (d) forecasting downstream network access usage by the at least one user during a future time interval based on said monitored network access usage by the at least one user and said forecast function; and
  - (e) based on said forecasting, allocating network access to each user on a per user basis for a future time interval.
2. (Original) The method of claim 1, wherein network access comprises bandwidth across the shared communications medium for consumption by each user in conveying data of the user.

3. (Original) The method of claim 1, wherein each network access allocation represents a bandwidth allowance of a respective user during the future time interval.
4. (Original) The method of claim 3, wherein each network access allocation represents bandwidth utilized by each user during the future time interval.
5. (Original) The method of claim 1, wherein said step of monitoring comprises monitoring bandwidth that is consumed by each user in a downstream direction at time intervals of fifteen minutes to sixty minutes.
6. (Original) The method of claim 1, wherein the time interval for which network access usage is monitored and the future time interval are equal in length.
7. (Original) The method of claim 1, wherein the time interval for which network access usage is monitored and the future time interval each is approximately one minute to sixty minutes in length.
8. (Original) The method of claim 1, wherein said step of monitoring network access usage includes collecting data representative of logical data units transmitted to each user during a time interval.

9. (Original) The method of claim 1, wherein said step of monitoring network access usage includes collecting data representative of the number of bytes and data packets transmitted to each user during a time interval.
10. (Original) The method of claim 1, wherein said step of monitoring network access usage includes collecting data representative of the number of logical data units of the user that are dropped during a time interval.
11. (Original) The method of claim 1, wherein said step of monitoring network access usage includes collecting data representative of the number of bytes and data packets of the user that are dropped during a time interval.
12. (Original) The method of claim 1, wherein said step of allocating network access comprises allocating network access equally to the users.
13. (Original) The method of claim 1, wherein the shared communications medium is part of a Shared Access Carrier Network.
14. (Original) The method of claim 13, wherein the Shared Access Carrier Network comprises a Cable Network and the shared communications medium comprises a coaxial cable.
15. (Original) The method of claim 13, wherein the Shared Access Carrier Network comprises a wireless network.

16. (Original) The method of claim 1, further comprising prioritizing the users for allocating network access.

17. (Original) The method of claim 16, wherein said prioritizing is based on fairness considerations.

18. (Original) The method of claim 17, wherein the users are prioritized based on user throughput during a time interval, with a user with lesser throughput receiving priority over a user with greater throughput.

19. (Original) The method of claim 17, wherein the users are prioritized based on data loss for each user during a time interval, with a user with greater data loss having priority over a user with lesser data loss.

20. (Original) The method of claim 17, wherein the users are prioritized based on network access usage for a particular time of day, with a user with lesser network access usage for the particular time of day receiving priority over a user with greater network access usage for the particular time of day.

21. (Original) The method of claim 17, wherein the users are prioritized based on both user throughput and data loss of the user during a time interval.

22. (Original) The method of claim 17, wherein users are prioritized based on an established minimum quality of service (QoS) standard.

23. (Original) The method of claim 16, wherein said step of prioritizing is based on service level agreements (SLAs) of the users regarding the provision of network access.

24. (Original) The method of claim 23, wherein SLAs specify respective minimum levels of network access for users, and said step of prioritizing includes comparing said monitored network access usages for the users with the specified respective minimum levels of network access, and awarding priority to a user when said respective monitored network access usage for such user falls below the user's specified respective minimum level of network access.

25. (Original) The method of claim 23, wherein SLAs specify respective time-of-day (TOD) minimum levels of network access for users, and said step of prioritizing includes comparing said monitored network access usages for such users during the specified respective TOD with the specified respective TOD minimum levels of network access, and awarding priority to a user when said monitored network access usage during the specified respective TOD for such user falls below the user's specified respective TOD minimum level of network access.

26. (Original) The method of claim 23, wherein SLAs specify respective minimum levels of network access up to a maximum burstable levels with target probability for users, and said step of prioritizing includes comparing said monitored network access usage both with the respective minimum levels of network access for such users and with the respective maximum burstable levels of network access for such users, and comparing the instances the respective maximum levels of network access were obtained for such users out of all instances the respective maximum levels of network access were requested for such users.

27. (Original) The method of claim 23, wherein SLAs provide respective fees for network access usage, and said step of prioritizing comprises sorting such users based on each user's respective fee in decreasing order, with a user with a higher fee receiving priority over a user with a lesser fee.

28. (Original) The method of claim 23, wherein SLAs provide respective credits for levels of network access below respective guaranteed levels for users, and said step of prioritizing comprises sorting such users based on each user's respective credit in decreasing order, with a user with a higher credit receiving priority over a user with a lower credit.

29. (Original) The method of claim 23, wherein SLAs specify respective minimum levels of network access for users, and said step of allocating network access comprises allocating network access to such users equal to each user's specified respective minimum level of network access.

30. (Canceled)

31. (Previously Presented) The method of claim 1, wherein said step of forecasting comprises predicting future network access usage of each user based upon monitored past network access usage patterns of each user.

32. (Previously Presented) The method of claim 1, wherein said step of forecasting comprises applying an adaptive-response-rate single exponential smoothing function and a Holt-Winters' seasonal exponential smoothing function to said monitored network access usages of the users.

33. (Previously Presented) The method of claim 1, wherein said step of allocating network access comprises allocating network access to users proportional to each user's forecasted network access usage.

34. (Previously Presented) The method of claim 1, further comprising the step of prioritizing the users for allocating network access.

35. (Original) The method of claim 34, wherein said prioritizing is based on each user's forecasted network access usage.

36. (Original) The method of claim 34, wherein said users are prioritized in increasing order of each user's forecasted network access usage, with a user with a lesser forecasted network access usage receiving priority over a user with a greater forecasted network access usage.



37. (Original) The method of claim 34, wherein said step of allocating network access comprises allocating network access to the users equal to each user's forecasted network access usage, and then allocating any remaining network access equally to the users.

38. (Original) The method of claim 34, wherein said step of allocating network access comprises allocating network access to the users equal to each user's forecasted network access usage, and then allocating any remaining network access to the users proportionally based on each user's forecasted network access usage.

39. (Previously Presented) A method of providing network access across a shared communications medium between competing users, comprising the steps of:

- (a) monitoring network access usage by at least one user during a time interval;
- (b) determining whether the at least one user has been assigned a forecast function;
- (c) in response to determining that the at least one user has been assigned a forecast function, determining whether to check for a seasonal cycle related to the user;
- (d) in response to determining to check for a seasonal cycle, executing a seasonal identifier algorithm;
- (e) forecasting upstream and downstream network access usage by the at least one user during a future time interval based on said monitored network access usage by the at least one user; and
- (f) based on said forecasted network access usage, allocating network access to the at least one user for the future time interval.

40. (Original) The method of claim 39, wherein said step of forecasting comprises predicting future network access usage of each user based upon monitored past network access usage patterns of each user.

41. (Original) The method of claim 39, wherein said step of forecasting comprises applying an adaptive-response-rate single exponential smoothing function and a Holt-Winters' seasonal exponential smoothing function to said monitored network access usages of the users.

42. (Original) The method of claim 39, wherein said step of allocating network access comprises allocating network access to the users proportionally based on each user's forecasted network access usage.

43. (Original) The method of claim 39, further comprising the step of prioritizing the users for allocating network access.

44. (Original) The method of claim 43, wherein said prioritizing is based on each user's forecasted network access usage.

45. (Original) The method of claim 43, wherein said users are prioritized in increasing order of each user's forecasted network access usage, with a user with a lesser forecasted network access usage receiving priority over a user with a greater forecasted network access usage.

46. (Original) The method of claim 43, wherein said prioritizing is based on fairness considerations.
47. (Original) The method of claim 43, wherein the users are prioritized based on user throughput during a time interval, with a user with lesser throughput rate receiving priority over a user with greater throughput rate.
48. (Original) The method of claim 43, wherein the users are prioritized based on data loss for each user during a time interval, with a user with greater data loss rate having priority over a user with lesser data loss rate.
49. (Original) The method of claim 43, wherein the users are prioritized based on network access usage for a particular time of day, with a user with lesser network access usage for the particular time of day receiving priority over a user with greater network access usage for the particular time of day.
50. (Original) The method of claim 43, wherein the users are prioritized based on both user throughput and data loss of the user during a time interval.
51. (Original) The method of claim 43, wherein users are prioritized based on an established minimum quality of service (QoS) standard.

52. (Original) The method of claim 43, wherein said step of prioritizing is based on service level agreements (SLAs) of the users regarding the provision of network access.

53. (Original) The method of claim 52, wherein SLAs specify respective minimum levels of network access for users, and said step of prioritizing includes comparing said monitored network access usages for the users with the specified respective minimum levels of network access, and awarding priority to a user when said respective monitored network access usage for such user falls below the user's specified respective minimum level of network access.

54. (Original) The method of claim 52, wherein SLAs specify respective time-of-day (TOD) minimum levels of network access for users, and said step of prioritizing includes comparing said monitored network access usages for such users during the specified respective TOD with the specified respective TOD minimum levels of network access, and awarding priority to a user when said monitored network access usage during the specified respective TOD for such user falls below the user's specified respective TOD minimum level of network access.

55. (Original) The method of claim 52, wherein SLAs specify respective minimum levels of network access up to a maximum burstable levels with target probability for users, and said step of prioritizing includes comparing said monitored network access usages both with the respective minimum levels of network access for such users and with the respective maximum burstable levels of network access for such users, and comparing the instances the respective maximum levels of network access were obtained for such users out of all instances the respective maximum levels of network access would have been utilized for such users.

56. (Original) The method of claim 52, wherein SLAs provide a respective fee for network access usage by users, and said step of prioritizing comprises sorting such users based on each user's respective fee in decreasing order, with a user with a higher fee receiving priority over a user with a lesser fee.

57. (Original) The method of claim 52, wherein SLAs provide respective credits for levels of network access below respective guaranteed levels for users, and said step of prioritizing comprises sorting such users based on each user's respective credit in decreasing order, with a user with a higher credit receiving priority over a user with a lower credit.

58. (Original) The method of claim 52, wherein SLAs specify respective minimum levels of network access for users, and said step of allocating network access comprises allocating network access to such users equal to each user's specified respective minimum level of network access.

59. (Original) The method of claim 43, wherein said step of allocating network access comprises allocating network access to the users equal to each user's forecasted network access usage, and then allocating any remaining network access equally to the users.

60. (Original) The method of claim 43, wherein said step of allocating network access comprises allocating network access to the users equal to each user's forecasted network access usage, and then allocating any remaining network access to the users proportionally based on each user's forecasted network access usage.

61. (Original) The method of claim 39, wherein each network access allocation represents a bandwidth allowance of a respective user during the future time interval.

62. (Original) The method of claim 39, wherein each network access allocation represents bandwidth utilized by each user during the future time interval.

63. (Currently Amended) A method of providing network access across a shared communications medium of a Cable Network between competing users, comprising the steps of:

- (a) monitoring network access usage by at least one user for a time interval;
- (b) determining whether the at least one user has previously been assigned a forecast function;
- (c) in response to determining that the at least one user has not been assigned a forecast function, assigning a forecast function to the at least one user;
- (d) based on said monitoring and said assigned forecast function, forecasting the number of logical data units (LDUs) of at least one user that will be transmitted over a future time interval; and
- ~~(d)~~ (e) based on said forecasting, allocating network access available to the at least one user for the future time interval.

64. (Currently Amended) A method of providing network access across a shared communications medium of a Cable Network between competing users, comprising the steps of:

- (a) monitoring network access usage requested by each user for a time interval;

(b) determining whether the at least one user has previously been assigned a forecast function;

(c) in response to determining that the at least one user has been previously been assigned a forecast function, determining whether to check for a seasonal cycle related to the user; and

(d) forecasting the number of logical data units (LDUs) that will be requested by each user over a future time interval based on said monitoring and said forecast function; and

~~(e)~~ (e) based on said forecasting, allocating network access available to each user for the future time interval.

## **REMARKS**

This is a full and timely response to the outstanding non-final Office Action mailed May 30, 2006. Upon entry of the amendments in this response, claims 1 – 29 and 31 – 64 remain pending. In particular, Applicants amend claim 63 and 64. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

### **I. Claim Objections**

The Office Action indicates that claim 64 is objected to because this claim has two steps labeled “(c)”. In an effort to comply with the Office Action request, Applicants amend claim 64 by changing “(c)” to “(e)”. Applicants submit that this amendment overcomes the objection and that claim 64 is in condition for allowance.

### **II. Rejections Under 35 U.S.C. §103**

In order for a claim to be properly rejected under 35 U.S.C. §103, the teachings of the cited art reference must suggest all features of the claimed invention to one of ordinary skill in the art. *See, e.g., In re Dow Chemical*, 837 F.2d 469, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988); *In re Keller*, 642 F.2d 413, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981). Further, “[t]he PTO has the burden under section 103 to establish a prima facie case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *In re Fine, Minnesota Mining and Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).



**A. Claim 1 is Allowable Over Pandya in view of Aras**

The Office Action indicates that claim 1 stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over U.S. Patent Number 6,671,724 (“*Pandya*”) in view of U.S. Patent Number 5,884,037 (“*Aras*”). Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* fails to disclose, teach, or suggest all of the elements of claim 1.

More specifically, claim 1 recites:

A method of providing network access across a shared communications medium in a downstream direction towards competing users, comprising the steps of:

(a) monitoring network access usage by at least one user during a time interval;

(b) *determining whether the at least one user has previously been assigned a forecast function*;

(c) in response to determining that the at least one user has not previously been assigned a forecast function, *assigning a forecast function to the at least one user*;

(d) forecasting downstream network access usage by the at least one user during a future time interval based on said monitored network access usage by the at least one user and said forecast function; and

(e) based on said forecasting, allocating network access to each user on a per user basis for a future time interval. (*emphasis added*)

Applicants respectfully submit that the cited art fails to disclose, teach, or suggest all of the elements of claim 1. More specifically, neither *Pandya* nor *Aras*, separately or in combination, appear to disclose a “method of providing network access... comprising the steps of... *determining whether the at least one user has previously been assigned a forecast function* [and] in response to determining that the at least one user has not previously been assigned a forecast function, *assigning a forecast function to the at least one user*” as recited in claim 1. As indicated by the Office Action, “*Pandya et al.* does not disclose determining whether the at least one user has been previously assigned a forecast function and, if not, assigning a

forecast function to the at least one user” (OA p. 4, line 1). However, the Office Action asserts that *Aras* discloses “using an ARIMA model to predict bandwidth allocations and for reference to if no previous trend data is known, meaning no previous prediction function has been assigned, choosing the terms of the prediction function using trial and error thereby, assigning a prediction function” (OA p. 4, line 6).

Applicants respectfully disagree with this analysis. *Aras* does not appear to disclose any condition that is met prior to utilization of an ARIMA. *Aras* appears to disclose a “general class of models used to forecast a time series entirely from its own history” (col. 4, line 33). *Aras*, however, does not disclose “***determining whether the at least one user has previously been assigned a forecast function***” as recited in claim 1. Applicants respectfully submit that the passage “[i]f no particular trends are known, choosing the number of terms can be performed by trial and error” (*Aras* col. 5, line 3) does not equate to “***determining whether the at least one user has previously been assigned a forecast function,***” as asserted by the Office Action, for at least the reason that there is no suggestion in *Aras* or elsewhere that trend data is indicative of “***determining whether the at least one user has previously been assigned a forecast function.***” Additionally, neither *Aras* nor *Pandya* suggest “in response to determining that the at least one user has not previously been assigned a forecast function, ***assigning a forecast function to the at least one user***” as recited in claim 1. For at least these reasons, claim 1 is allowable over the cited art.

**B. Claim 39 is Allowable Over *Pandya* in view of *Aras***

The Office Action indicates that claim 39 stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over U.S. Patent Number 6,671,724 (“*Pandya*”) in view of U.S. Patent

Number 5,884,037 (“*Aras*”). Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* fails to disclose, teach, or suggest all of the elements of claim 39.

More specifically, claim 39 recites:

A method of providing network access across a shared communications medium between competing users, comprising the steps of:

(a) monitoring network access usage by at least one user during a time interval;

(b) ***determining whether the at least one user has been assigned a forecast function;***

(c) in response to determining that the at least one user has been assigned a forecast function, ***determining whether to check for a seasonal cycle related to the user;***

(d) in response to determining to check for a seasonal cycle, executing a seasonal identifier algorithm;

(e) forecasting upstream and downstream network access usage by the at least one user during a future time interval based on said monitored network access usage by the at least one user; and

(f) based on said forecasted network access usage, allocating network access to the at least one user for the future time interval.

Applicants respectfully submit that the cited art fails to disclose, teach, or suggest all of the elements of claim 39. More specifically, neither *Pandya* nor *Aras*, separately or in combination, appear to disclose a “method of providing network access... comprising the steps of... ***determining whether the at least one user has been assigned a forecast function*** [and] in response to determining that the at least one user has been assigned a forecast function, ***determining whether to check for a seasonal cycle related to the user***” as recited in claim 39. As indicated by the Office Action, “*Pandya et al.* does not disclose determining whether the at least one user has been assigned a forecast function, if so, determining whether to check for a seasonal cycle related to the user and execution a seasonal identifier algorithm” (OA p. 5, third line from end). However, the Office Action asserts that *Aras* discloses “determining that a

previous ARIMA model has been used and for reference to using previous trends to periodically repeat the calculation of ARIMA model function to adjust the terms used in the function based on the latest seasonal information” (OA p. 4, line 6).

Applicants respectfully disagree with this analysis. *Aras* does not appear to disclose any condition that is met prior to utilization of an ARIMA. *Aras* appears to disclose a “general class of models used to forecast a time series entirely from its own history” (col. 4, line 33). *Aras*, however, does not disclose “***determining whether the at least one user has been assigned a forecast function***” as recited in claim 39. Applicants respectfully submit that the passage “[i]f no particular trends are known, choosing the number of terms can be performed by trial and error” (*Aras* col. 5, line 3) does not equate to “***determining whether the at least one user has been assigned a forecast function,***” as asserted by the Office Action, for at least the reason that there is no suggestion in *Aras* or elsewhere that trend data is indicative ***determining whether the at least one user has been assigned a forecast function.***” Additionally, neither *Aras* nor *Pandya* suggest “in response to determining that the at least one user has been assigned a forecast function, ***determining whether to check for a seasonal cycle related to the user***” as recited in claim 39. For at least these reasons, claim 39 is allowable over the cited art.

C. **Claims 2 – 4, 6, 8 – 11, 13, 15 – 25, 31, 33 – 37, 40, 42 – 54, 57 – 59, and 61 – 62 are Allowable Over *Pandya* in view of *Aras***

The Office Action indicates that claims 2 – 4, 6, 8 – 11, 13, 15 – 25, 28 – 29, 31, 33 – 37, 40, 42 – 54, 57 – 59, and 61 – 62 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over *Pandya* in view of *Aras*. Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* fails to disclose, teach, or suggest all of the elements

of claims 2 – 4, 6, 8 – 11, 13, 15 – 25, 28 – 29, 31, 33 – 37, 40, 42 – 54, 57 – 59, and 61 – 62. More specifically, dependent claims 2 – 4, 6, 8 – 11, 13, 15 – 25, 31, and 33 – 37 are believed to be allowable for at least the reason that these claims depend from allowable independent claim 1. Dependent claims 40, 42 – 54, 57 – 59, and 61 – 62 are believed to be allowable for at least the reason that they depend from allowable independent claim 39. *In re Fine, Minnesota Mining and Mfg.Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

**D. Claims 5 and 7 are Allowable Over *Pandya* in view of *Aras* and further in view of *Barnes***

The Office Action indicates that claims 5 and 7 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over *Pandya* in view of *Aras* and further in view of U.S. Patent Number 6,529,486 (“*Barnes*”). Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* and further in view of *Barnes* fails to disclose, teach, or suggest all of the elements of claims 5 and 7. More specifically, dependent claims 5 and 7 are believed to be allowable for at least the reason that these claims depend from allowable independent claim 1. *In re Fine, Minnesota Mining and Mfg.Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

**E. Claims 12, 38, and 60 are Allowable Over *Pandya* in view of *Aras* and further in view of *Hanko***

The Office Action indicates that claims 12, 38, and 60 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over *Pandya* in view of *Aras* and further in view of U.S. Patent Number 6,438,141 (“*Hanko*”). Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* and further in view of *Hanko* fails to disclose, teach, or

suggest all of the elements of claims 12, 38, and 60. More specifically, dependent claims 12 and 38 are believed to be allowable for at least the reason that these claims depend from allowable independent claim 1. Dependent claim 60 is believed to be allowable for at least the reason that this claim depends from allowable independent claim 39. *In re Fine, Minnesota Mining and Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

**F. Claim 63 is Allowable Over *Pandya* in view of *Aras* and further in view of *Farah***

The Office Action indicates that claim 63 stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over *Pandya* in view of *Aras* and further in view of U.S. Patent Number 6,567,418 (“*Farah*”). Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* and further in view of *Farah* fails to disclose, teach, or suggest all of the elements of claim 63. More specifically, claim 63 recites:

A method of providing network access across a shared communications medium of a Cable Network between competing users, comprising the steps of:

(a) monitoring network access usage by at least one user for a time interval;

(b) ***determining whether the at least one user has previously been assigned a forecast function;***

(c) in response to determining that the at least one user has not been assigned a forecast function, ***assigning a forecast function to the at least one user;***

(d) based on said monitoring and said assigned forecast function, forecasting the number of logical data units (LDUs) of at least one user that will be transmitted over a future time interval; and

(d) based on said forecasting, allocating network access available to the at least one user for the future time interval. (***emphasis added***)

Applicants respectfully submit that the cited art fails to disclose, teach, or suggest all of the elements of claim 63. More specifically, neither *Pandya* nor *Aras*, separately or in

combination, appear to disclose a “method of providing network access... comprising the steps of... *determining whether the at least one user has previously been assigned a forecast function* [and] in response to determining that the at least one user has not been assigned a forecast function, *assigning a forecast function to the at least one user*” as recited in claim 63. As indicated by the Office Action, “Pandya et al. does not disclose determining whether the at least one user has been previously assigned a forecast function and, if not, assigning a forecast function to the at least one user” (OA p. 4, line 1). However, the Office Action asserts that *Aras* discloses “using an ARIMA model to predict bandwidth allocations and for reference to if no previous trend data is known, meaning no previous prediction function has been assigned, choosing the terms of the prediction function using trial and error thereby, assigning a prediction function” (OA p. 4, line 6).

Applicants respectfully disagree with this analysis. *Aras* does not appear to disclose any condition that is met prior to utilization of an ARIMA. *Aras* appears to disclose a “general class of models used to forecast a time series entirely from its own history” (col. 4, line 33). *Aras*, however, does not disclose “*determining whether the at least one user has previously been assigned a forecast function*” as recited in claim 63. Applicants respectfully submit that the passage “[i]f no particular trends are known, choosing the number of terms can be performed by trial and error” (*Aras* col. 5, line 3) does not equate to “*determining whether the at least one user has previously been assigned a forecast function,*” as asserted by the Office Action, for at least the reason that there is no suggestion in *Aras* or elsewhere that trend data is indicative of “*determining whether the at least one user has previously been assigned a forecast function.*” Additionally, neither *Aras* nor *Pandya* suggest “in response to determining that the at least one user has not been assigned a forecast function, *assigning a forecast function to the at least one*

*user*” as recited in claim 63. Additionally, *Farah* does not overcome the deficiencies of *Aras* and *Pandya*. For at least these reasons, claim 63 is allowable over the cited art.

**G. Claim 64 is Allowable Over *Pandya* in view of *Aras* and further in view of *Farah***

The Office Action indicates that claim 64 stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over *Pandya* in view of *Aras* and further in view of *Farah*. Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* and further in view of *Farah* fails to disclose, teach, or suggest all of the elements of claim 64. More specifically, claim 64 recites:

A method of providing network access across a shared communications medium of a Cable Network between competing users, comprising the steps of:

(a) monitoring network access usage requested by each user for a time interval;

(b) ***determining whether the at least one user has previously been assigned a forecast function;***

(c) in response to determining that the at least one user has been previously been assigned a forecast function, ***determining whether to check for a seasonal cycle related to the user;*** and

(d) forecasting the number of logical data units (LDUs) that will be requested by each user over a future time interval based on said monitoring and said forecast function; and

(e) based on said forecasting, allocating network access available to each user for the future time interval. (***emphasis added***)

Applicants respectfully submit that the cited art fails to disclose, teach, or suggest all of the elements of claim 64. More specifically, neither *Pandya* nor *Aras*, separately or in combination, appear to disclose a “method of providing network access... comprising the steps of... ***determining whether the at least one user has previously been assigned a forecast***



*function* [and] in response to determining that the at least one user has been previously been assigned a forecast function, *determining whether to check for a seasonal cycle related to the user*” as recited in claim 64. As indicated by the Office Action, “Pandya et al. does not disclose determining whether the at least one user has been previously assigned a forecast function and, if not, assigning a forecast function to the at least one user” (OA p. 4, line 1). However, the Office Action asserts that *Aras* discloses “using an ARIMA model to predict bandwidth allocations and for reference to if no previous trend data is known, meaning no previous prediction function has been assigned, choosing the terms of the prediction function using trial and error thereby, assigning a prediction function” (OA p. 4, line 6).

Applicants respectfully disagree with this analysis. *Aras* does not appear to disclose any condition that is met prior to utilization of an ARIMA. *Aras* appears to disclose a “general class of models used to forecast a time series entirely from its own history” (col. 4, line 33). *Aras*, however, does not disclose “*determining whether the at least one user has previously been assigned a forecast function*” as recited in claim 64. Applicants respectfully submit that the passage “[i]f no particular trends are known, choosing the number of terms can be performed by trial and error” (*Aras* col. 5, line 3) does not equate to “*determining whether the at least one user has previously been assigned a forecast function*,” as asserted by the Office Action, for at least the reason that there is no suggestion in *Aras* or elsewhere that trend data is indicative of “*determining whether the at least one user has previously been assigned a forecast function*.” Additionally, neither *Aras* nor *Pandya* suggest “in response to determining that the at least one user has been previously been assigned a forecast function, *determining whether to check for a seasonal cycle related to the user*” as recited in claim 64. Additionally, *Farah* does not

overcome the deficiencies of *Aras* and *Pandya*. For at least these reasons, claim 64 is allowable over the cited art.

**H. Claim 14 is Allowable Over *Pandya* in view of *Aras* and further in view of *Farah***

The Office Action indicates that claim 14 stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over *Pandya* in view of *Aras* and further in view of *Farah*. Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* and further in view of *Farah* fails to disclose, teach, or suggest all of the elements of claim 14. More specifically, dependent claim 14 is believed to be allowable for at least the reason that this claim depends from allowable independent claim 1. *In re Fine, Minnesota Mining and Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

**I. Claims 26 and 55 are Allowable Over *Pandya* in view of *Aras* and further in view of *Gemar***

The Office Action indicates that claims 26 and 55 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over *Pandya* in view of *Aras* and further in view of U.S. Patent Number 6,483,839 (“*Gemar*”). Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* and further in view of *Gemar* fails to disclose, teach, or suggest all of the elements of claims 26 and 55. More specifically, dependent claim 26 is believed to be allowable for at least the reason that this claim depends from allowable independent claim 1. Dependent claim 55 is believed to be allowable for at least the reason that this claim depends from allowable independent claim 39. *In re Fine, Minnesota Mining and Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

**J. Claims 27 and 56 are Allowable Over *Pandya* in view of *Aras* and further in view of *Hou***

The Office Action indicates that claims 27 and 56 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over *Pandya* in view of *Aras* and further in view of U.S. Patent Number 6,324,184 (“*Hou*”). Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* and further in view of *Hou* fails to disclose, teach, or suggest all of the elements of claims 27 and 56. More specifically, dependent claim 27 is believed to be allowable for at least the reason that this claim depends from allowable independent claim 1. Dependent claim 56 is believed to be allowable for at least the reason that this claim depends from allowable independent claim 39. *In re Fine, Minnesota Mining and Mfg.Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

**K. Claims 32 and 41 are Allowable Over *Pandya* in view of *Aras* and further in view of *Huang***

The Office Action indicates that claims 32 and 41 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over *Pandya* in view of *Aras* and further in view of U.S. Patent Number 6,151,852 (“*Huang*”). Applicants respectfully traverse this rejection for at least the reason that *Pandya* in view of *Aras* and further in view of *Huang* fails to disclose, teach, or suggest all of the elements of claims 32 and 41. More specifically, dependent claim 32 is believed to be allowable for at least the reason that this claim depends from allowable independent claim 1. Dependent claim 41 is believed to be allowable for at least the reason that this claim depends from allowable independent claim 39. *In re Fine, Minnesota Mining and Mfg.Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002).

## CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested.

Any other statements in the Office Action that are not explicitly addressed herein are not intended to be admitted. In addition, any and all findings of inherency are traversed as not having been shown to be necessarily present. Further, any and all findings of well-known art and official notice, or statements interpreted similarly, should not be considered well known for at least the specific and particular reason that the Office Action does not include specific factual findings predicated on sound technical and scientific reasoning to support such conclusions.

If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,



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